



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,402	07/26/2006	Takatsugu Yamada	XA-10623	7032
181	7590	10/01/2009	EXAMINER	
MILES & STOCKBRIDGE PC			JOHNSON, PHILLIP A	
1751 PINNACLE DRIVE				
SUITE 500			ART UNIT	PAPER NUMBER
MCLEAN, VA 22102-3833			3656	
			NOTIFICATION DATE	DELIVERY MODE
			10/01/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ipdocketing@milesstockbridge.com
sstiles@milesstockbridge.com

Office Action Summary	Application No.	Applicant(s)	
	10/587,402	YAMADA ET AL.	
	Examiner	Art Unit	
	PHILLIP JOHNSON	3656	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 01 June 2009.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-14 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-14 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 7/26/06 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 7/8/09.

4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.

5) Notice of Informal Patent Application

6) Other: _____.

DETAILED ACTION

Status of Claims

The amendment filed on June 1, 2009 is acknowledged. Claims 1 – 14 are pending in this application. The Examiner acknowledges the addition of claim 14. As amended, claim 1 overcomes the 35 U.S.C 112, second paragraph rejection cited in the previous office action.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1, 3 – 7, 9 – 12 and 14 rejected under 35 U.S.C. 102(e) as being anticipated by Shoda et al. (Shoda, 7,416,216).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention “by another,” or by an appropriate showing under 37 CFR 1.131.

2. Re claim 1, Shoda discloses (Fig. 3B) all of the limitations of a similar device comprising:

- Torque transmitting portions (6 and 8) that are respectively disposed on an outer surface of the male shaft (1) and on an inner surface of the female shaft (2) with a gap there between when no torque is applied (*id. col. 5, lines 5 – 18*).
- The torque transmitting portions coming into contact with each other so as to transmit torque there between when the torque applied to one of the male and female shafts exceeds a predetermined value (*id. col. 5, lines 49 – 57*).
- A preload portion including a rolling member (7) or spherical body (claim 10) that is disposed between the outer surface of the male shaft and the inner surface of the female shaft at a different position from a position where the torque transmitting portions are located and that rolls when the male shaft and the female shaft move relative to each other in the axial direction.
- An elastic member (10), or leaf spring (claim 12) that is disposed adjacent to the rolling member in the diametral direction and that biases the male shaft and the female shaft through the rolling member,
- The preload portion transmitting torque between the male and female shafts when a torque is applied to one of the male and female shafts (*id. col. 5, lines 40 – 88*).
- A rotation angle A of the male shaft with respect to the female shaft corresponding to the gap between the torque transmitting portions is less than

a rotation angle B of the male shaft with respect to the female shaft corresponding to a maximum deflection capacity of the elastic member (inherent to structure according to Fig. 3B, as the gaps between the torque transmitting portions 6 and 8 are smaller than the flex distance of elastic member 10).

Re claim 3 (Fig. 3B)

- The torque transmitting portions include a projection elongated in the axial direction and having a substantially arc sectional shape formed on the outer surface of the male shaft .
- A groove (4) elongated in the axial direction and having a substantially arc sectional shape formed on the inner surface of the female shaft.

Re claim 4

- The torque transmitting portions are not in contact with each other torque until a torque applied to one of the male and female shafts exceeds a predetermined value (*ibid.* col. 5, lines 5 – 18 and col. 5, lines 49 – 57).

Re claim 5

- The torque transmitting portions include a spline-fitting structure (*id.* col. 7, lines 44 – 45) or a serration-fitting structure formed on the outer surface of the male shaft and the inner surface of the female shaft.

Re claim 6 (Fig. 3B)

- The preload portion has a first axial groove (3) disposed on the outer surface of the male shaft and a second axial groove (5) disposed on the inner surface of the female shaft opposite to the first axial groove.
- The rolling member and the elastic member are disposed between the first axial groove and the second axial groove.

Re claim 7 (Fig. 3B)

- A plurality of preload portions are disposed between the male shaft and the female shaft.
- The transmitting portions are disposed between adjacent preload portions.

Re claim 9 (Fig. 3B)

- The preload portions are disposed in the circumferential direction with an interval of 120 degrees (*id. col. 5, lines 18 – 25*) having the torque transmitting portions in- between.

Re claim 10 (Fig. 3B)

- The torque transmitting portions are disposed at the center in the circumferential direction between the preload portions.

Re claim 14 (Fig. 3B)

- A female shaft (2) and a male shaft (1) that are fitted together so as to transmit torque there between and to move relative to each other in an axial direction (*id. col. 5, lines 26 – 32*).

- Torque transmitting portions (6 and 8) respectively disposed on an outer surface of the male shaft and on an inner surface of the female shaft with a gap there between (*ibid.* col. 5, lines 5 – 18).
- A preload portion including a rolling member (7) and an elastic member (10), the rolling member being disposed between the outer surface of the male shaft and the inner surface of the female shaft at a different position from a position where the torque transmitting portions are located and rolling when the male shaft and the female shaft move relative to each other in the axial direction (*ibid.* col. 5, lines 26 – 32).
- The elastic member being disposed adjacent to the rolling member and biasing the male shaft and the female shaft with the rolling member.
- The preload portion transmits torque between the male and female shafts when a torque applied to one of the male and female shafts is less than a predetermined value (*ibid.* col. 5, lines 40 – 88).
- The torque transmitting portions come into contact with each other so as to transmit torque there between when a torque applied to one of the male and female shafts exceeds the predetermined value (*ibid.* col. 5, lines 49 – 57).
- The torque transmitting portions come into contact with each other prior to a maximum deflection capacity of the elastic member being reached (inherent to structure according to Fig. 3B, as the gaps between the torque

transmitting portions 6 and 8 are smaller than the flex distance of elastic member 10).

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claim 2 rejected under 35 U.S.C. 103(a) as being obvious over Shoda.

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention “by another”; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Shoda discloses all of the limitations as set forth in claim 1, but fails to disclose wherein the rotation angle A is set from 0.01 degrees to 0.25 degrees.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of Shoda such the rotation angle A is set from 0.01 degrees to 0.25 degrees, since it has been held that discovering optimum value or a result effective variable involves only routine skill in the art.

5. Claim 8 is rejected under 35 U.S.C. 103(a) as being obvious over Shoda in view of Grosse-Entrup (Grosse, 4,103,514).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Shoda discloses all of the limitations as set forth in claim 1, but fails to disclose the preload portions are disposed in the circumferential direction with an interval of 180 degrees having the torque transmitting portions in-between.

Grosse-Entrup (Fig. 2) teaches preload portions (9) disposed in the circumferential direction with an interval of 180 degrees having the torque transmitting portions (1) in-between as a more efficient and economical arrangement that uses fewer preload elements for transmitting torque.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of Shoda such that the preload portions are disposed in the circumferential direction with an interval of 180 degrees having the torque transmitting portions in-between, as taught by Grosse-Entrup, a more efficient and economical arrangement that uses fewer preload elements for transmitting torque.

6. Claim 13 is rejected under 35 U.S.C. 103(a) as being obvious over Shoda in view of Breese (USP 6,761,503).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention “by another”; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR

1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Shoda discloses all of the limitations as set forth in claim1, but fails to disclose wherein a solid lubricant film is formed on the outer surface of the male shaft or the inner surface of the female shaft.

Breese teaches the use of a solid lubricant (50) formed on the inner surface of a female shaft for the purpose of minimizing the amount of force that is required to effect relative movement with respect to a telescopically coupled male shaft (*id. col.1* , lines 65 – 67).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use a solid lubricant formed on the inner surface of a female shaft, as taught by Breese, in the device of Shoda for the purpose of minimizing the amount of force that is required to effect relative movement with respect to a telescopically coupled male shaft.

Response to Arguments

Applicant's arguments with respect to claims 1 – 13 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PHILLIP JOHNSON whose telephone number is (571)270-5216. The examiner can normally be reached on MON - FRI, 7:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on (571) 272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Phillip Johnson/
Examiner, Art Unit 3656

/Richard WL Ridley/
Supervisory Patent Examiner, Art Unit 3656